

research notes

Yossi Sheffi on Navigating the Energy Crunch

MIT's Yossi Sheffi is a widely recognized expert in systems optimization, risk analysis, and supply chain management. He recently shared with *ON* his latest thinking about these topics in light of current trends in the global marketplace.



You have become well known to a larger public in recent years, in part on the strength of your well-received book, *The Resilient Enterprise: Overcoming Vulnerability for Competitive Advantage*, which was published in 2005. What are you working on nowadays?

One of my main areas of focus is helping companies adjust to the high price of oil and looking at its implications for all supply chain management activities.

In adjusting supply networks and inventory policies to higher prices, we see several trends. Some companies are moving to more of a regional model for inventory, because when you have centralized inventory you also have higher transportation costs. The result is usually more safety stock in more locations. Similarly, businesses are choosing to make fewer but larger shipments, resulting in even higher inventory levels. Another shift is that companies are bringing transportation management in-house and are paying for fuel separately. So the cost is visible, and they can control it better.

What we don't know yet is what the impact of higher fuel prices will be on trade patterns. Very few companies are talking about moving production back to the U.S. or Europe. Companies can absorb a lot of fuel cost increases before it becomes viable to move production back to the West. Furthermore, having production in China is not just a matter of the labor cost advantage. The Chinese have, in fact, become very good at product design and at delivering good quality. The current changes in the global economy are not yet enough to force a fundamental shift that will "un-flatten" the world, but we are trying to understand what will be the tipping point.

Another topic I am working on is an interesting recent social development in the attitudes of the public toward the government. After Hurricane Katrina, people expect the business community to respond to disasters faster and better than government agencies. These are expectations that go well beyond what we call today "corporate social responsibility." That's probably going to be the topic of my next book.

Given recent trends in IT, how do you view the outlook for technological breakthroughs, for example the possibility of harnessing Web 2.0 to better link consumers and business?

Technology, in the aggregate, is moving forward, but if you are looking for big breakthroughs, this will take a while. The challenges are not so much technical as social. We can keep track of what consumers do and what they want, but we can't always use the information. For instance, because of privacy concerns, there has been surprising consumer resistance to vehicle tags that can automatically assess road tolls.

What kind of changes in the business environment are possible if the price of oil stays where it is or even goes up?

Forecasting is difficult, especially about the future. But it is certain that over the next 10 years a higher price of oil will drive businesses to use video conferencing instead of travel and consumers to "visit" other countries via their computers. There are all kinds of ways of moving bits rather than moving atoms.

However, if you talk about 20 or 25 years in the future, I think there will be an amazing reduction in the price of energy in general. We will finally begin to harness renewable energy, and the incentives for this will be global warming, security concerns, lack of conventional energy sources, and environmental issues. The main challenge is to remove fossil fuel consumption from mobile vehicles—primarily cars, buses, and trucks—and instead power them using stationary sources like power plants. We can power central plants in a variety of ways, including clean coal, nuclear, wind, and solar power. Getting there is a challenge. There's a lot of unrelated, duplicative work going on in various research institutions and universities. What we should do is harness the entire government research funding apparatus to a Manhattan-like project to operationalize renewable energy. I am hopeful the next administration will do that. ■

For more on Professor Sheffi's work, go to <http://mit.edu/sheffi/www/index.html>.